THE DISPOSITION EFFECT IN SHARES TRADING

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Abstract

The disposition effect is related to the way investors tend to treat unrealized gains and losses on financial assets. In particular, the research found that investors have the tendency to realize gains more quickly than losses. Shefrin and Statman (1985) found that people dislike losing significantly more than they enjoy winning. The disposition effect has been described as “one of the most robust facts about the trading of individual investors" because investors will hold stocks that have lost value yet sell stocks that have gained value. In 1979, Daniel Kahneman and Amos Tversky traced the cause of the disposition effect to the so-called "prospect theory". Given the significance of disposition effect and its impact on investment decisions, the present study investigates factors affecting the disposition effect in the Indian stock market. The results of the study indicate that loss aversion, regret aversion, trading volumes, automatic selling and incremental value of holding positively contribute to the disposition effect.

Keywords: Disposition Effect, Biases, Behavioral Finance, Investment, India

1. INTRODUCTION

Most economists and some investors assumed people behaved rationally when it came to their money. Economic theory assumed investors to be rational. Which means, they would make good, even optimal decisions in terms of maximizing their wealth when their money was at stake. People are expected to do the thing that earned them the most. Psychologists who study the behaviour of people and how they make decisions were under no such illusions. They identified the irrational impulses, gut instincts, and the way our brains process information, through experimental studies and were not very pleased with the cold rationality embedded in economic models. When the researchers in finance stopped arguing about theory and studied how investors actually make decisions, they found that investors behave the way psychologists predicted, not the way economists predicted.

The clearest and startling finding came from Odean (1998). Odean's research is like a pioneer study of the behavioral finance literature, considering that the field is very young. Odean studied the stock-selection decisions of individual investors. He found we do everything wrong: We trade too often for no economic gain. We are undiversified, holding only a few stocks that get our attention. We easily sell off stocks that have done well, but we have trouble letting go of stocks that have performed badly, holding onto them in the hope they will come back.

One of the important theories in behavioral economics, the Prospect Theory of Kahneman and Tversky (1979) suggests that in choosing alternatives that involve risk, subjects behave in an ‘S’ shaped value function that is convex in the loss region and concave in the gain region. This implies that they seek risk when faced with losses and are risk averse when encountering gains. Shefrin and Statman (1985) applied it to investor behavior and suggested that investors have a tendency to sell assets that have gained value (winners) and keep assets that have lost value (losers) which behavior they termed as ‘disposition effect’.

Disposition effect was first introduced by Shefrin and Statman (1985) to describe the dominant tendency of investors to keep loser stocks for a long-term but to sell winner stocks too early. They employed a model to explain why investors tend to sell winner stocks too early and to hold loser stocks for a long time. Investors may expect that the prices will return, sooner or later, to their previous status, that is to say, existing loser stocks may change into winner stocks and vice versa. To decide to keep the stocks or to sell them, investors can examine the value function. This implies that risk aversion concerns profit. In other words, investors are willing to identify profit. As a result, they sell profitable stock quickly. Barber and Odean (2002) use prospect

theory to explain disposition effect. They believe that investors typically consider the purchase price as a reference point, upon which they decide whether to keep their stocks or to sell them. For instance, if they expect that the price of certain stocks is going to rise they will buy it and make the price as a reference point. Given the desirability of prospect theory, in the case that the stock prices increase the investor identify the profit by selling the stocks. If, on the other hand, the stocks are dropping off, the investor tries to convince himself that the price will rise and, therefore, he keeps the loser stocks. Odean (1998) has investigated disposition effect by analyzing the information related existing transaction accounts in a brokerage. He found that stockholders, on the whole, prefer loser stocks over the winner stocks which are confirmed by other studies (Shefrin & Statman, 1985; Odean, 1998; Weber & Camerer, 1998; Grinblatt & Keloharju, 2001) that come across similar findings.

This current study extends the exploration and examines whether the disposition effect holds true in an Indian context which has a culture that is predominantly conservative and dictated by family values and religions. Besides, whether gender has any influence on disposition i.e whether Indian men and women behave in the same manner. Behavioral biases are deeply ingrained in human nature and thus, the same must be noted among those who do not participate in stock market investments as well.

2. LITERATURE REVIEW

Disposition effect can be explained by the two features of the prospect theory: a) people value gains and losses relative to a reference point (the initial purchase price of shares) b) tendency to seek risk when faced with possible losses and avoid risk when a certain gain is possible according to Weber and Camerer (1998). It was observed by them through experiments that investors sell more shares when the sale price is above the purchase price or last period price. Trading volume is positively correlated with the size of price changes.

Kahneman and Tversky (1979) proposed the prospect theory and the "S-shaped" value function that is formulated on the basis of change in financial wealth. They argued that agents pay more attention to the gains or losses of wealth rather than the absolute level of wealth. Prospect theory conjectures that agents exhibit greater sensitivity to losses than gains. Agents are risk-averse to gains while they exhibit the risk-loving tendency in face of losses. In mathematical terms, the value function of loss-averse agents is concave for positive net returns and convex for negative net returns. Loss aversion is central to the prospect theory and it has important implications for financial theories and financial market. Benartzi and Thaler (1995) explained the "equity premium puzzle" as that the loss-averse investors demand a higher risk premium for risk associated with negative market returns than positive market returns. Financial economists develop and test equilibrium asset pricing models based on myopic loss aversion hypothesis (Barberis and Huang, 2001), and derive optimal portfolio choice under loss aversion (Kahneman and Tversky, 1979).

In the stock market, people have noticed that investors have the propensity to sell their winning stocks earlier and hold on to their losing stocks over a longer period. Shefrin and Statman (1985) termed this phenomenon as the disposition effect. They argued that the stock-by stock mental accounting and the loss aversion of the Kahenman-Tversky-type investors underlie disposition effect. Investors sell their winning stocks when the stock price rises to a certain level determined by them ("mental accounting") in order to cash in gains and protect them against losses. On the other hand, investors are not willing to realize losses ("loss aversion") in the hope of break even in the future. Gains and losses are relative to the reference point, which is mostly related to the purchase cost of stocks although it may have other choices subject to individual investors.

Thanks to the availability of data, disposition effect has been tested in recent empirical studies and experiments for its broad existence in the financial markets. By examining the relationship between current trading volume and historical trading volume at different stock price levels, Ferris, Ferris et. al. (1987) supported the existence of disposition effect in the stock market. They found that the trading volume of stocks with capital gains significantly exceeds the volume in stocks with capital losses. By the same reasoning line, Kaustia (2000) examined the Finnish IPO market where an increase in turnover for negative initial IPO return on the day when they surpass the offer price for the first time, as predicted by disposition effect.

Although the disposition effect renders a good explanation for the motivation of stock selling, the trading decision of investors is indeed driven by a complex of reasons. Some motivations may be evidence of behavioral factors, such as prospect theory, while others may be related to rational expectation, investment trading strategy, and other unexplored factors.

A study by Brown and Kagel (2009) found out that though investors trade for better stocks but do not achieve maximum potential earnings because they choose to ignore information and hold on to a stock regardless of its performance indicating a status quo bias. The bias has been noticed through experiments in an economics laboratory that it arises from regret avoidance, drive for consistency, self-perception, and illusory control. The results of their experiments did not support the disposition effect.

Abbes et al (2009) examined the theory that future returns can be predicted on the basis of the disposition investors' level of unrealized gains or losses. This was suggested by the model by Grinblatt and Bing (2005) in which the behavior of disposition investors leads to momentum in stock prices. On a study done on 120 French stocks, those with high past returns tended to have positive unrealized capital gains, while low past return stocks are more likely to generate unrealized capital losses.

Tehrani and Gharehkoolchian (2012) using availability sampling method with investors in the Tehran stock exchange market, noted that regret aversion had a positive relationship with disposition effect while self-control was negatively related. They also observed that higher the level of education, the lesser was the disposition effect rate. While they also

examined the level of overconfidence based on gender, no study was done to examine whether gender has an impact on the disposition effect. A market survey in Taiwan - Kuo, and Chen (2012) found that investors also exhibited the reversed disposition effect or a pattern of symmetry. The experimental evidence collected by Imas (2016) and Imas et. al. (2016) suggests that the realization of losses plays an important role in explaining divergent behavior in dynamic investment decisions. Specifically, when losses from an investment are cashed in, investors tend to lower their risk propensity. In contrast, when losses are "kept on the paper", the risk propensity of investors increases after a loss.

By far, most empirical literature focus on investor behavior in the developed markets, such as the U.S., Finland, Israel, etc. In general, investor behavior in the developing markets is not well explored and the behavioral difference of investors in various markets is not very clear-cut. In recent years, academicians have begun the behavioral research on the developing markets (Shu et al., 2002). In particular, India's stock market has grabbed the great attention of researchers. Such interest is attributable in part to its unique trading environment in India, such as the divisive shareholding structure of listed companies, the rooted government intervention in the market, and the high Price-to-Earning ratio of stocks, etc.

3. METHODOLOGY

The aim of this study is to examine the relationships between disposition effect and five of the behavioral biases. Besides, as the biases are intrinsic to human behavior the study seeks to observe if the biases are also noted among those who have no inclination towards stock markets and do not invest in them. The population constituted the cross-section of the society and judgment sampling was adopted in that some select groups were approached for primary data. The method used for collection of data was a questionnaire that contained 26 items including on an individual's personal attributes. The questions were clear, intelligible and were arranged sequentially in order to prompt the required trend of thought amongst the participants. Thus, the questions were not listed out at random but were in sets so that the continuity in thought over a particular behavioral bias was established. There were no explanations set out in the questionnaire with regard to any of the items. A total of 100 responses were targeted however, 69 responses were received.

Some of the previous researchers used a simulation of stock price to predict actual and paper losses (see Weber and Camerer's, 1998). Other researchers used quantitative techniques like survival analysis (see Feng and Seasholes, 2005 and Stoff man, 2008) or logistic regressions (see Grinblatt and Keloharju, 2000). The methodology used in the present study is similar to Ploner (2017) which has advantages of a laboratory experiment to understand disposition effect and to assess how alternative decision-making protocols may affect it.

4. RESULTS AND DISCUSSIONS

The sample is constituted of larger male respondents i.e. 59. There was a mix of married and unmarried in the sample with the breakup of 16 married and 43 un-married males while the corresponding figures for females were 7 and 3. The majority were in the age group above 30 years and 21 were of the age below 30. The number of respondents above the age of 40 was 5 which means that the 64 persons were below the age of 40 or lesser. There were 3 persons who were above 50 years of age. The respondents were across from across 4 out of the 5 options of occupation namely, student, the private sector, government or non-private sector, self-employed and retired; there being none who has retired. The largest group were students at 36 followed by the group of those employed in the private sector which numbered 25. The representation with regard to educational qualifications was that 36 persons were graduates while 29 were post-graduates. There 2 each with professional qualifications and undergraduate. The respondents were from across 14 states and 1 union territory out of the total of 29 states and 7 union territories in India. 35 were from Goa and the next largest group from Maharashtra was 6

The sample was represented from across the 4 slabs of income with 24 persons with income of less than 2.5 lakhs per annum, 18 persons with annual income of between Rs 2.5 lakhs and 5 lakhs, 20 persons whose annual income is between 5 lakhs and 10 lakhs and 7 persons earning an annual income of over Rs 10 lakhs. 16 out of the 24 persons with an annual income of fewer than 2.5 lakhs also had annual savings of less than Rs 50,000 and all of these are students. On the other hand, all of the 7 persons earning Rs 10 lakhs per annum had annual savings of Rs 2 lakhs or more. The respondents in the other two income brackets had a diverse amount of annual savings ranging from less than Rs 50,000 to more than Rs 2 lakhs. Two out of the 7 persons who have an annual income of over Rs 10 lakhs are students.

While one of the respondents did not have any financial assets, 16 of them owned only bank deposits and another one invested only in shares. Investment in bank deposits was the most favored option with as many 53 persons owning this financial asset. 40 of the respondents also invested in insurance policies while 14 persons invested in mutual funds. 26 of the respondents owned a house or a flat and out of them, 10 had mortgaged the house or the flat against loans. Those investing in the stock market were 31 persons and out of which, 8 borrow and invest in the stock market. The bulk of these investors i.e. 15 of them had stock market experience of fewer than 3 years and those with 10 years of experience or more were 5. Only of the investors prefers to base decisions on feelings while the majority of them uses recommendations, media, and overall past performance

The questionnaire had two items on the evaluating aspect of risk aversion – and the results (Figure 1.) showed that when faced with an option of a sure chance of winning as against a 50% chance of winning double the amount, a larger number of respondents chose the option that had sure chance of winning. On the other hand, when faced with the

prospect of a sure loss vis-à-vis a 50% chance of losing double the amount, larger number of respondents chose the second option of 50% chance of losing double the amount (Figure 1.). Interestingly, both investors in the stock market and non-investors showed the same trend in the risk aversion behavior. There were 23 males and 4 females who chose the option of sure chance of winning and with regard to the second item, there were 25 males and 6 females with the second option of 50% chance of losing double the amount

The behavioral bias of becoming more upset about the loss of money when it occurs alone or when it occurs directly after a gain or directly after a loss was also queried under another two items in the questionnaire. The first of the two items dealt with feeling a greater pain with an event if 'the loss was 20' or 'the loss of 20 occurred after a gain of 60' or 'no difference' was felt. Majority of the respondents i.e. 41 (Figure 2.) felt a greater pain on when 'the loss was 20'. The breakup between both investors in the stock market and non-investors was 23 and 18 which were the highest in each of the categories indicating the same trend for this behavioral bias. The second of the two items dealt with feeling a greater pain with an event if 'the loss was 20' or 'the loss of 20 occurred after a loss of 60' or 'no difference' was felt. Majority of the respondents i.e. 39 felt a greater pain on when 'the loss of 20 occurred after a loss of 60'. The breakup between both investors in the stock market and non-investors was 18 and 21 which were the highest in each of the categories indicating again, the same trend for this behavioural bias amongst the investors in the stock market and non-investors

The next behavior that was sought to be examined was the relationship of trading volumes with the disposition effect. Again, two questions in the questionnaire sought to elicit the responses. The first hypothetical situation created was wherein 10,000 units of a stock that were bought one month ago for Rs. 100 is selling today at Rs. 80. One month from now, the stock price will have either increased in price by 40 (i.e. price one month from now, will be Rs. 120) or decreased in price by 40 (i.e. price one month from now, will be Rs. 40); both of which possibilities are equally likely. The respondents had to choose between the two options of a) Selling the stock now, thereby realizing Rs. 200,000 loss and b) Holding the stock for one more month, given 50-50 odds between losing an additional Rs 400,000 or gaining Rs 200,000 overall (Figure 3.). Majority of the respondents i.e. 54 of them chose to hold the stock for one more month; 25 of them were investors and 29 were non-investors both being the largest number in their respective categories. The second question was reframed to project a current gain: 10,000 units of a stock that were bought one month ago for Rs. 100 is selling today at Rs. 120. One month from now, the stock price will have either increased in price by 40 (i.e. price one month from now, will be Rs. 160) or decreased in price by 40 (i.e. price one month from now, will be Rs. 80); both the possibilities being equally likely. The options were a) Selling the stock now, thereby realizing Rs. 200,000 gain and b) Holding the stock for one more month, given 50-50 odds between gaining an additional Rs 400,000 or losing Rs 200,000 overall (Figure 3.). A larger number of respondents i.e 36 chose the option to a) Selling the stock now, thereby realizing Rs. 200,000 gain with the breakup of 17 and 19 amongst the investors and non-investors.

Two questions were aimed to relate the disposition effect with automatic selling and deliberate selling. The first question was framed with a stop loss order as a stock was bought one month ago for Rs. 1000 with stop-loss order at Rs 900. The stock got sold automatically at 900 and is currently selling at Rs. 800. One month from now, the stock price will have either increased in price by 400 (i.e. price one month from now, will be Rs. 1200) or decreased in price by 400 (i.e. price one month from now, will be Rs. 400); both the possibilities being equally likely. The options given were a) buy the stock again and b) do nothing. 51 of the 69 respondents chose the option of 'do nothing'; 23 being investors and 28 being non-investors – both categories indicating the same preference (Figure 4.). The second question was with a limit order: a stock was bought one month ago for Rs. 1000 with a limit order at Rs 1100. The stock got sold automatically at Rs.1100. The same stock is trading at Rs. 1200 today. One month from now, the stock price will have either increased in price by 400 (i.e. price one month from now, will be Rs. 1600) or decreased in price by 400 (i.e. price one month from now, will be Rs. 800). Both the possibilities are equally likely. The options given were the same a) buy the stock again and b) do nothing. 44 of the persons responded with 'do nothing' and there 20 investors and 24 non-investors in the group

The last area in the questionnaire was to relate the incremental value of holding to disposition effect. Accordingly, the question was broken down into three parts – a) units to be purchased b) reaction after the current price has increased and c) reaction when the current price has decreased. The questions framed were:

– Rs. 100 is to be invested for two months. At the beginning of month 1, how many shares to buy is to be decided. At the beginning of month 2, either sell shares at the new and changed price or purchase additional shares at the new price. A share is available at Rs. 10. After one month, the price will either increase by 4 (i.e. price will be Rs 14) or decrease by 4 (i.e. price will be Rs 6). Both the possibilities are equally likely. How many units will now be purchased at a price of Rs. 10? The options offered were from 0 shares to 10 shares.

– Rs. 100 is invested in shares of Rs 10 each for two months. The price of the share has increased in month 1 and is now available at Rs. 14. After one month, the price will either increase by 4 (i.e. price will be Rs 18) or decrease by 4 (i.e. price will be Rs 10). Both the possibilities are equally likely. The options given were a) buy more shares at Rs 14 b) sell holding at a rate of Rs 14 and make a profit of Rs 4 per share c) do nothing.

– Rs. 100 is invested in shares of Rs 10 each for two months. The price of the share has increased in month 1 and is now available at Rs. 14. After one month, the price will either increase by 4 (i.e. price will be Rs 18) or decrease by 4 (i.e. price will be Rs 10). Both the possibilities are equally likely. The options given were a) buy more shares at Rs 14 b) sell holding at a rate of Rs 14 and make a profit of Rs 4 per share c) do nothing.

The responses received were:

– 30 persons chose 5 shares; the number of investors and non-investors being the same i.e 15 and another 15 persons chose 10 shares; the breakup between investors and non-investors being 5 and 10 respectively. No respondent chose 7 or 8 or 9 shares.

– 34 of them opted to sell the holding and make a profit; the numbers in the categories of investors and non-investors being the largest in each of the categories i.e 14 and 20 respectively. Iii) 34 opted to buy more shares; investors being 19 and non-investors being 15.

5. CONCLUSIONS

The same behavioral biases were noted among those who invest in the stock markets as well as among those who do not. This leads to the strong presumption that the biases are intrinsic to human nature and are revealed when one enters into some sort of financial dealings. This aspect must be examined with a larger sample largely consisting of among the working community of the society rather than of students. The results of the study indicate that loss aversion, regret aversion, trading volumes, automatic selling or deliberate selling and incremental value of holding positively contributes to the disposition effect. Further work in the area of studying investor attributes would include compiling and complementing trading data with survey data of investor attitudes towards risk-taking. Such data could shed more light into trading motivation and strategy setups. Additionally, the study could be extended to take into account the attributes of the investments, such as news and financial data.

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Appendix 1

Figure 1. Risk Aversion and Disposition Effect

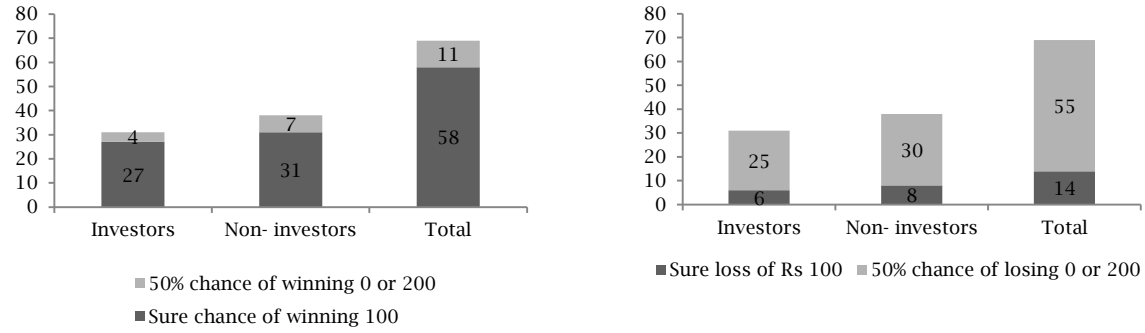

Figure 2. Regret Aversion and Disposition Effect

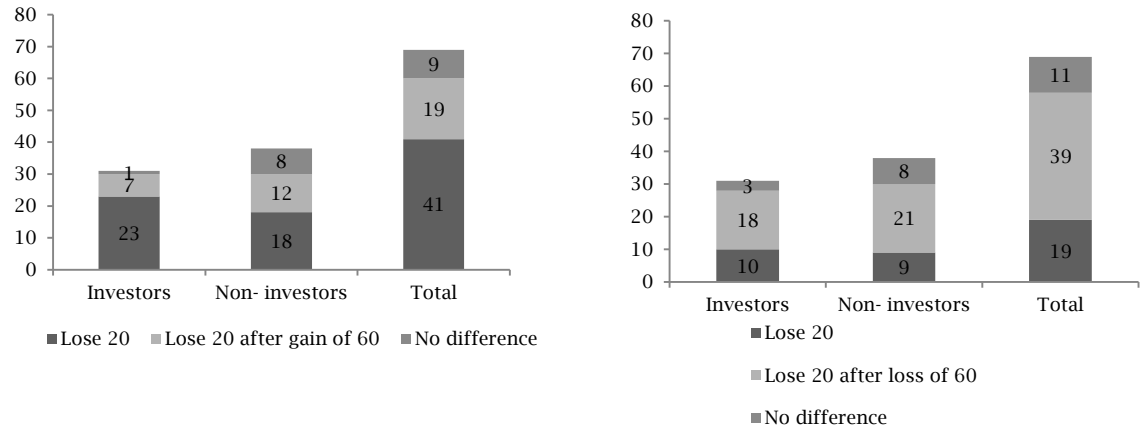

Figure 3. Trading Volumes and Disposition Effect

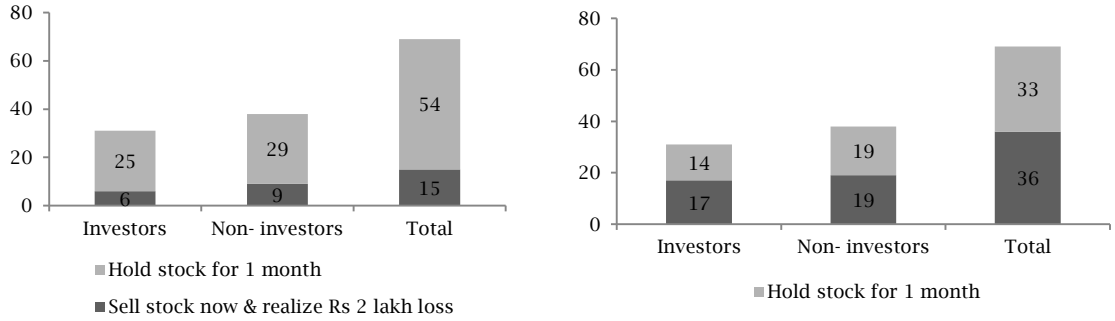

Figure 4. Automatic or Deliberate Selling and Disposition Effect

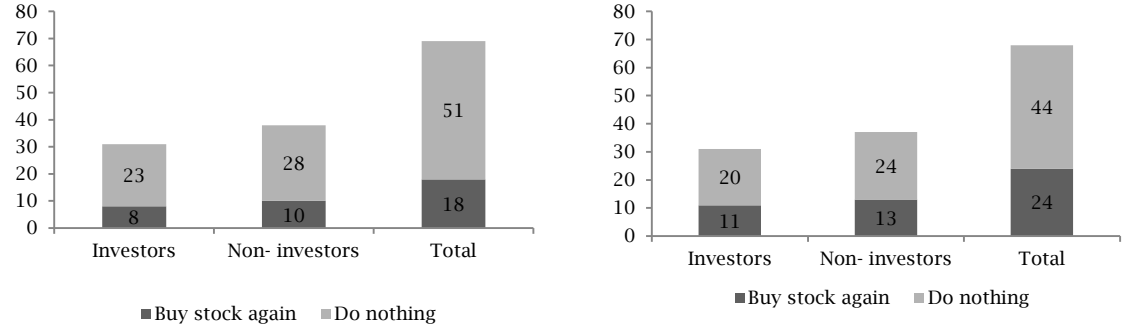

Figure 5. Incremental Value of Holding & Disposition Effect